L O F

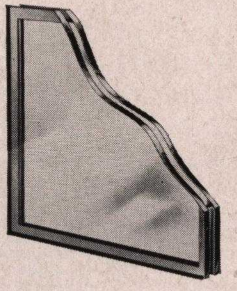
GLASS for the BUILDER

INDEX

Product	Page
Thermopane*	2, 3, 4, 5
Polished Plate Glass	6
Color Clear*	6
Colored Plate Glass	6
Polished Plate Glass for Mirrors	7
Vitrolite*	8, 9
Window Glass	10
Blue Ridge Figured and Wire Glass	11
Tuf-flex*	11
Heat Absorbing Plate Glass	11
Branch Offices	Back Cover

*Reg. U.S. Pat. Off.

LIBBEY·OWENS·FORD GLASS COMPANY



This is a cutaway view of double *Thermopane.* The metal-to-glass bond seals the edges of the two panes of glass.

DESCRIPTION

Thermopane is a factory-built transparent glass unit composed of two or more lights of glass separated by ¼″ or ½″ of dehydrated captive air, hermetically sealed around the edges at the factory with a patented metal-to-glass bond. It is the first successful mass-produced insulating unit of its kind for general use.

MANUFACTURE

L·O·F *Thermopane* can be furnished in squares, rectangles or straight edge shapes, providing angles on such shapes are not too acute. It is generally fabricated to ordered sizes, but new Standard Sizes for double *Thermopane* recently have been developed. (See page 4.)

Double *Thermopane* is available in different types of glass. For this information and for dimensional and weight characteristics, see the chart on page 5.

FOUR FEATURES

1. **GREATER YEAR 'ROUND INSULATION** against cold and heat. Makes living conditions more healthful and comfortable. Saves fuel.

2. **L·O·F'S BONDERMETIC SEAL.** This metal-to-glass seal bonds the panes of glass into one unit to guard against dirt and moisture entering the dry air space.

3. **CLEARER VISION.** The sealed-in dry air greatly reduces the possibility of condensation on the glass.

4. **ONLY TWO SURFACES TO CLEAN.** The glass surfaces inside a unit are specially cleaned at the factory.

USES

Double-glass *Thermopane* is practical for glazing of wood or metal windows and doors in homes, apartments, schools, hospitals and other structures requiring heating or air conditioning.

This attractive *Thermopane* Picture Window overlooks Lake Michigan at Fox Point Colony, Milwaukee, Wis. Architect, H. Schmitt.

HEAT LOSS TRANSMISSION

Thermopane units provide a high resistance to heat flow, varying with the number of panes and the thickness of the air space used. In summer the low heat transmission coefficient reduces the load on air conditioning systems. In winter it saves heat.

The greater efficiency of *Thermopane* compared with single glazing makes it possible to use larger windows to keep the cost of fuel constant. For example, a house could have 115 square feet of *Thermopane* instead of 40 square feet of single glazing without any increased loss of heat. *Thermopane* permits the influx of a larger amount of the solar heat through exterior glazing of buildings without a prohibitive compensating loss by conduction. By combining various types of heat-absorbing and colored glass in the fabrication of *Thermopane,* the amount and quality of light transmission may be controlled, if this is desirable.

Because *Thermopane* is an insulating unit, it reduces the coefficient of heat transfer. This increases the temperature of the *Thermopane* surface facing the room side, thereby reducing "windowpane chills" and making living conditions more healthful and comfortable Many builders have found this a desirable sales factor.

HEAT TRANSMISSION TABLE

The over-all heat transmission coefficient U varies with the ranges of temperature at which the coefficient is determined. For most practical heat loss calculations, coefficient U can be the value determined at 10 degrees outside temperature, 70 degrees inside temperature, 15 mph outside air velocity, 0.25 mph average inside air velocity. The following table gives such values from actual tests with glass sizes 30" x 30":

Number of Panes	Glass Thickness	U Value		
		Air Space		
		None	¼"	½"
Single Glass	⅛"	1.16		
	¼"	1.15		
Double *Thermopane* (one air space)	⅛" or ¼"		.65	.58
Triple *Thermopane* (two air spaces)	¼"		.47	.40

EXTRA STRENGTH CONDITIONS

Where extra strength in glazing is required to withstand high pressures which would rupture standard plate glasses, *Thermopane* can be manufactured from ¼" *Tuf-flex.* (See chart on page 5.) Where unusual pressure and high wind velocities exist, consult Libbey·Owens·Ford engineering service before specifying *Thermopane* requirements.

STANDARD DOUBLE *THERMOPANE* SIZES

The new standard sizes for double *Thermopane* recently have been developed by Libbey·Owens·Ford in cooperation with leading manufacturers of wood and steel sash in answer to requests from many architects, designers and builders. (See the following page for full details.) These standard size *Thermopane* units comply with the American Standards Association 4" modular construction.

ADVANTAGES

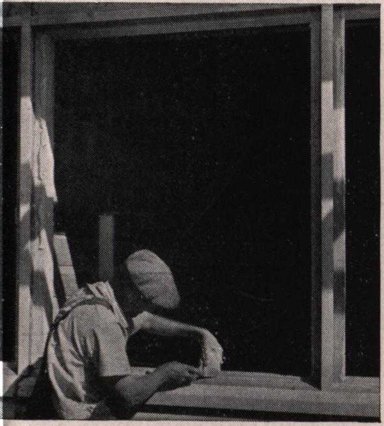
There are numerous advantages to specifying standard *Thermopane* sizes. Manufacturers of wood sash have developed standard Picture Window frames and sash units using them. Glass distributors and wholesale sash and door jobbers will carry warehouse stocks of these units, thus making *Thermopane* more readily available. Builders can incorporate standard sizes in their specifications. Replacements and duplications of orders will be handled more quickly.

PICTURE WINDOWS — STANDARD SIZES

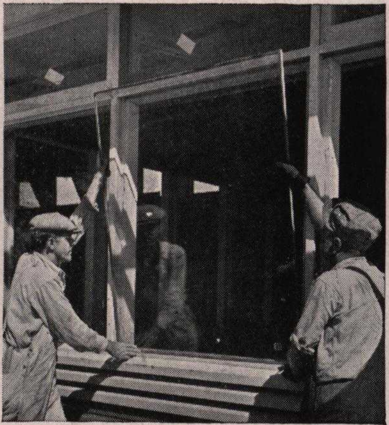
The new standard *Thermopane* units are being manufactured in a wide range of sizes, readily adaptable by builders for new construction and remodeling.

The sizes for Picture Windows in single lights, double hung wood window units and residential steel sash casements are shown on the next page.

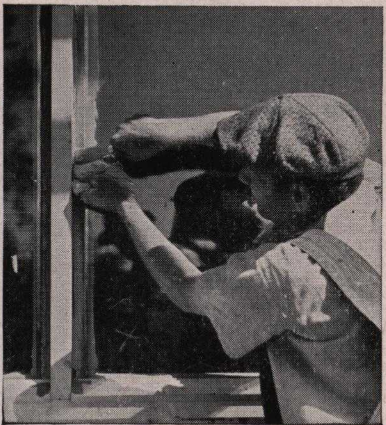
HOW TO INSTALL *THERMOPANE*, STEP-BY-STEP



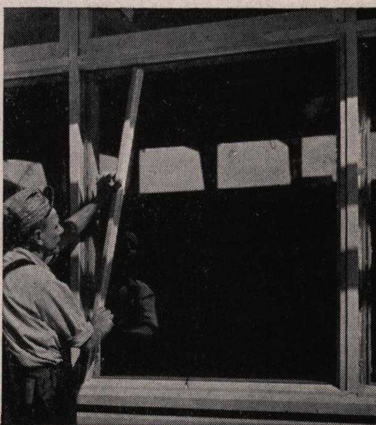
1—Bed putty sash with a glazing compound of high grade quality before the *Thermopane* unit is inserted.



2—Place unit on setting blocks. Press in evenly. Do not twist or force. Allow equal clearance between edges of glass and sash.



3—Fill voids on all edges with glazing compound. Do not use wood blocks on edges or top of *Thermopane.*

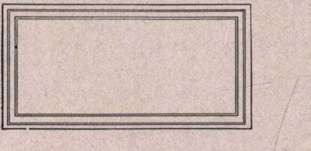


4—Cover perimeter with glazing compound. Apply wood stops. Do not exert undue pressure. A sufficient bed avoids strain at nail points.

L·O·F *Thermopane* (continued)

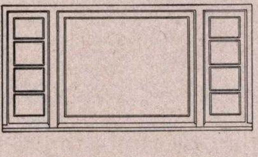
PICTURE WINDOWS—STANDARD SIZES

STANDARD WOOD PICTURE WINDOW UNITS



PICTURE WINDOW GLASS SIZE	
42″ x 66″	66″ x 96″
42″ x 72″	72″ x 84″
66″ x 84″	72″ x 96″

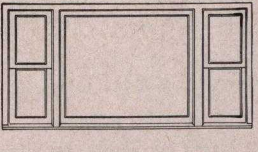
STANDARD WOOD PICTURE WINDOW UNITS WITH FLANKING CASEMENTS



WINDOW OPENING (Including the Casement Units) Width Height	PICTURE WINDOW GLASS SIZE Width Height
6′-5¼″ x 4′-2⅜″	35½″ x 48⅛″
8′-1″ x 4′-2⅜″	55¼″ x 48⅛″
9′-8¾″ x 4′-2⅜″	75″ x 48⅛″
6′-5¼″ x 5′-2⁹⁄₁₆″	35½″ x 60⅜″
8′-1″ x 5′-2⁹⁄₁₆″	55¼″ x 60⅜″
9′-8¾″ x 5′-2⁹⁄₁₆″	75″ x 60⅜″

Note: Standard double *Thermopane* units for above are composed of two ¼″ panes of polished plate glass with ½″ air space.

STANDARD WOOD PICTURE WINDOW UNITS WITH FLANKING DOUBLE HUNG WINDOWS

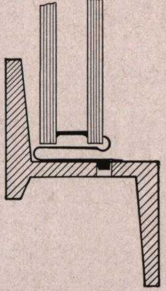


PICTURE WINDOW SASH OPENING (Without double hung unit) Width Height	PICTURE WINDOW GLASS SIZE Width Height
4′-4″ x 4′-6″	48½″ x 50″
5′-0″ x 4′-6″	56½″ x 50″
5′-8″ x 4′-6″	64½″ x 50″
6′-4″ x 4′-6″	72½″ x 50″
7′-0″ x 4′-6″	80½″ x 50″
8′-4″ x 4′-6″	96½″ x 50″
5′-8″ x 5′-2″	64½″ x 58″
6′-4″ x 5′-2″	72½″ x 58″
7′-0″ x 5′-2″	80½″ x 58″
8′-4″ x 5′-2″	96½″ x 58″
10′-0″ x 5′-2″	116½″ x 58″

Note: Standard double *Thermopane* units for above are composed of two ¼″ panes of polished plate glass with ½″ air space.

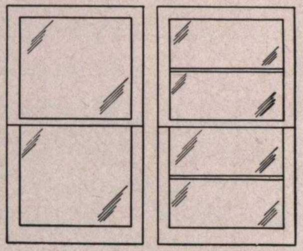
Window openings will vary according to individual sash manufacturers specifications. Therefore, manufacturers should be contacted for full information regarding their units.

SPECIAL GLAZING CLIP



For satisfactory glazing of *Thermopane* in steel sash, use special clips developed by Libbey·Owens·Ford. The illustration shows application of the glazing clip.

DOUBLE HUNG WINDOWS



Wood sash manufacturers offer 1¾″ check rail double hung windows, ASA modular coordinated, in both two-light and four-light horizontal sash as illustrated at right.

The complete range of standard sizes for double *Thermopane* double hung units is shown below.

DOUBLE HUNG WOOD WINDOWS

WINDOW OPENING Width Height	GLASS SIZES 2-LIGHT	4-LIGHT
2′-4″ x 4′-6″	24″ x 24″	24″ x 11⅝″
2′-8″ x 4′-6″	28″ x 24″	28″ x 11⅝″
3′-0″ x 4′-6″	32″ x 24″	32″ x 11⅝″
3′-4″ x 4′-6″	36″ x 24″	36″ x 11⅝″
3′-8″ x 4′-6″	40″ x 24″	40″ x 11⅝″
4′-0″ x 4′-6″	44″ x 24″	44″ x 11⅝″
2′-4″ x 5′-2″	24″ x 28″	24″ x 13⅝″
2′-8″ x 5′-2″	28″ x 28″	28″ x 13⅝″
3′-0″ x 5′-2″	32″ x 28″	32″ x 13⅝″
3′-4″ x 5′-2″	36″ x 28″	36″ x 13⅝″
3′-8″ x 5′-2″	40″ x 28″	40″ x 13⅝″
4′-0″ x 5′-2″	44″ x 28″	44″ x 13⅝″

Double *Thermopane,* manufactured with two lights of Double Strength "A" quality L·O·F Window Glass with ¼″ air space between, is standard for double hung windows.

RESIDENTIAL STEEL SASH

Double *Thermopane,* manufactured with two lights of Double Strength "A" quality L·O·F Window Glass with ¼″ air space between, is standard for residential steel casement windows.

STANDARD *THERMOPANE* SIZES

16″ x 12″, 16″ x 11⁵⁄₁₆″, 14″ x 12″, 14″ x 11⁵⁄₁₆″, 14″ x 10″, 14″ x 9⁵⁄₁₆″, 14¾″ x 12″, 17¼″ x 12″, 12″ x 12″.

Note: *Thermopane* must be glazed according to factory instructions. Obtain complete step-by-step glazing instructions from your Libbey·Owens·Ford Glass distributor or from the nearest district office.

For Don Graf's Technical Sheet on *Thermopane* and *Thermopane* Installation Details for Wood Sash, write to your nearest L·O·F district office.

THERMOPANE WARRANTY

For a period of five (5) years from date of shipment from our factory, we warrant that under normal conditions, material obstruction of vision resulting from film formation, or dust collection between the interior glass surfaces of THERMOPANE will not occur.

This warranty will be void unless THERMOPANE is installed in accordance with our installation instructions or if any cutting, fitting, or nipping of edges or corners, is done, accidentally or otherwise, after shipment from our factory, or if the unit is damaged in handling, installation or otherwise.

Our maximum liability under these warranties shall be the delivery of replacement lights of THERMOPANE to the railroad shipping point nearest the place of installation.

These warranties do not apply when THERMOPANE is used in railroad cars or other vehicles.

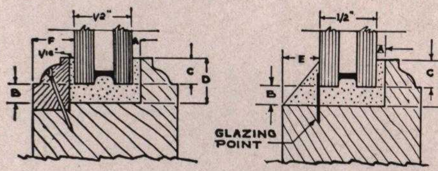
LIBBEY·OWENS·FORD GLASS COMPANY

THERMOPANE GLAZING DETAILS

It is extremely important to remember that *Thermopane* is a factory-fabricated unit and once made to specifications, its dimensions cannot be changed at point of use. Proper glazing clearances must be allowed on all *Thermopane* units, as well as sufficient rabbet depth, so that the metal seal does not show. The adjacent chart and drawings below give this information.

Symbol	Symbol Explanation	Glass Thickness					
		D. S. A. 1/8″ Plate 1/8″ Figured	3/16″ Sheet Glass		13/64″ or 1/4″ Plate 7/32″ or 1/4″ Figured		
A	Bed Putty—Width	1/16″—1/8″	1/16″—1/8″	1/16″—1/8″	1/8″	1/8″	1/8″
B	Glazing Clearance (all edges)	1/8″	1/8″	3/16″	1/8″	3/16″	1/4″
C	Metal Edge—Depth	3/8″	3/8″	3/8″	3/8″	1/2″	1/2″
D	Total Rabbet Depth (Clearance & metal, B+C)	1/2″	1/2″	9/16″	1/2″	11/16″	3/4″
E	Putty—Width	1/2″+*	5/8″+*	3/4″+*	3/4″+*	Wood Stops Only	
F	Wood Stop—Width	1/2″+	5/8″+	3/4″+	3/4″+	7/8″+	1″+
	Glass Sizes	8″ x 8″ to 32″ x 48″ and 12″ to 18″ wide by 60″ long or under 80 united inches	8″ x 8″ to 32″ x 48″ or under 80 united inches	34″ x 48″ to 36″ x 72″ or from 80 to 120 united inches	8″ x 8″ to 32″ x 48″ or under 80 united inches	34″ x 48″ to 38″ x 82″ or sizes not over 40″ wide from 80 to 120 united inches	40″ x 40″ to 50″ x 120″ and 60″ x 100″ or any sizes over 120 united inches

*Wood stops preferable.



AIR SPACE—1/4″ or 1/2″ air spaces can be furnished on all units up to the maximum size shown in the chart on page 5, but for building exteriors sizes 50″ wide and over will be furnished with 1/2″ air space only.

DOUBLE *THERMOPANE* TYPES OF GLASS AND SIZES

Type of Glass	Min. Size 1/4″ or 1/2″ Air Space	Max. Size with 1/4″ Air Space	Max. Size with 1/2″ Air Space	Thickness Range		Dimensional Tolerance	Approx. Aver. Net Weight per Sq. Ft.
				1/4″ Air Space	1/2″ Air Space		
D.S.A. 1/8″ Blue Ridge Figured 1/8″ Plate 1/8″ Heat Absorbing Plate	8″ x 8″	32″ Max. Width Length Not to Exceed 4½ times width. Total Area 1400 Sq. In.	24″ Max. Width Length Not to Exceed 4½ times width. Total Area 1400 Sq. In.	7/16″ to 9/16″	11/16″ to 13/16″	+1/16″ −1/16″	3½ lbs.
3/16″ Sheet	8″ x 8″	42″ Max. Width 72″ Max. Length	42″ Max. Width 72″ Max. Length	9/16″ to 11/16″	13/16″ to 15/16″	+1/8″ −1/16″	5 lbs.
1/4″ Plate	8″ x 8″	48″ Max. Width. 132″ Max. Length. Total Area 4800 Sq. In.	98″ Max. Width. 132″ Max. Length. Total Area 9600 Sq. In.	11/16″ to 13/16″	15/16″ to 1 1/16″	8″ to 36″ wide +1/8″ −1/16″ 36″ to 60″ wide +3/16″ −1/16″	7 lbs.
1/4″ *Color Clear* Plate		48″ Max. Width. 132″ Max. Length. Total Area 4800 Sq. In.	70″ Max. Width. 132″ Max. Length. Total Area 9240 Sq. In.				
1/4″ Heat Absorbing Plate	8″ x 8″	48″ Max. Width. 100″ Max. Length. Total Area 4800 Sq. In.	70″ Max. Width. 100″ Max. Length. Total Area 7000 Sq. In.	11/16″ to 13/16″	15/16″ to 1 1/16″		7 lbs.
7/32″ Colored Plate	8″ x 8″	48″ Max. Width. 120″ Max. Length. Total Area 4800 Sq. In.	60″ Max. Width. 120″ Max. Length. Total Area 6000 Sq. In.	5/8″ to 3/4″	7/8″ to 1″		6¼ lbs.
7/32″ Blue Ridge Figured	8″ x 8″	48″ Max. Width. 100″ Max. Length. Total Area 4800 Sq. In.	48″ Max. Width. 100″ Max. Length. Total Area 4800 Sq. In.	5/8″ to 3/4″	7/8″ to 1″		6 lbs.
Tuf-flex (1/4″) in Polished Plate, *Color Clear,* Heat Absorbing and Colored Plate	8″ x 8″	40″ x 48″	40″ x 48″	11/16″ to 13/16″	15/16″ to 1 1/16″	+1/8″ −1/16″	7 lbs.

For building exteriors, sizes 48″ wide or over will be manufactured with 1/2″ air space only.

L·O·F polished plate glass

DESCRIPTION

A transparent glass made by grinding and polishing the two surfaces of a glass blank with the objective of making them flat and parallel and to provide clear vision with minimum distortion.

QUALITIES

Silvering and mirror glazing quality plate glass is used for the finest mirrors and for high quality glazing in residences.

Glazing quality plate glass is used for general glazing purposes.

USES

⅛″, 13/64″—Small panes, mirrors, etc.

¼″—Residences and apartment buildings, windows of public and office buildings, large mirrors, shelving, table and desk tops, etc.

COLOR *CLEAR** PLATE GLASS

Exceptionally clear and colorless, this L·O·F product does not detract from the true color of objects. Its quality is equivalent to that of regular plate glass.

Color Clear plate glass is ideal for Picture Windows and mirrors.

Tuf-flex Tempered Plate Glass is supplied in ¼″ thickness or over in any of the foregoing types of plate glass.

COLORED PLATE GLASS

Libbey·Owens·Ford produces plate glass in the following colors: standard, medium and dark blue, peach and golden. Coloring is uniformly controlled so these glasses can be used for such glazing purposes as Picture Windows. They are also highly recommended for mirrors and decorative applications. It is furnished in quality equivalent to that of regular plate glass.

Tuf-flex Tempered Plate Glass is supplied in colored plate glass 7/32″ thickness or over.

SUGGESTED SPECIFICATIONS

Plate Glass shall be Libbey·Owens·Ford and shall be of (........) quality, and (........) thickness in accordance with U. S. Government Standards DD-G-451.

EDGE FINISHING AND SPECIAL WORK

All types of flat glass may have their edges finished in various ways. The standard edge finishes are clean cut and swiped, clean cut and seamed, ground and seamed, flat ground, flat polished, bullnose polished, round polished, semi-round or pencil polished, mitered edges ground or polished, beveled edges ground or polished. Glass may be cut to size or to simple shapes with a glass cutter, and finished with abrasive belts and grinding and polishing wheels; holes may be drilled with hand or machine drills. Notches may be cut with a drill and glass cutter in combination. In cutting holes or notches, care should be taken not to exceed safe limits of glass. Notches are well to avoid where possible. Cut edges should be used only where edges are to be covered or protected by molding; abutting edges should be flat ground and exposed edges polished. Ground or polished, mitered or rounded grooves, depressions for hand holes, pen grooves, etc., may be wheel cut into surface of glass.

CHART FOR SPECIFYING L·O·F POLISHED PLATE GLASS

Type or Color	Thickness	Thickness Tolerance	Standard Maximum Width and Length	Maximum Size Special Order	Approx. Weight Lbs. Per Sq. Ft.
Regular	⅛″	±1/32″	72″ x 74″	74″ x 144″	1.64
	13/64″	±1/32″	72″ x 74″	74″ x 144″	2.65
	¼″	±1/32″	124″ x 170″	124″ x 250″	3.27
	⅜″	±1/32″	100″ x 150″	100″ x 200″	4.90
	½″	±1/32″	100″ x 160″	100″ x 200″	6.54
	⅝″	±3/64″	80″ x 140″	100″ x 160″	8.17
	¾″	±3/64″	80″ x 130″	100″ x 150″	9.81
	⅞″	±1/16″	40″ x 100″	50″ x 100″	11.44
	1″	±1/16″	40″ x 100″	50″ x 100″	13.08
	1¼″	±1/16″	40″ x 100″	50″ x 100″	16.25
Color Clear	⅛″	±1/32″	40″ x 80″	55″ x 90″	1.64
	¼″	±1/32″	70″ x 140″	90″ x 140″	3.27
Colors:					
Standard Blue	7/32″	±1/32″	100″ x 140″	110″ x 170″	2.86
Medium Blue	7/32″	±1/32″	100″ x 140″	110″ x 170″	2.86
Dark Blue	7/32″	±1/32″	100″ x 140″	100″ x 170″	2.86
Peach	7/32″	±1/32″	100″ x 140″	100″ x 170″	2.86
Golden	7/32″	±1/32″	95″ x 120″	100″ x 150″	2.86

This large Picture Window of L·O·F Polished Plate Glass frames a beautiful view of the Shannon River near Onsted, Michigan.

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*Reg. U.S. Pat. Off.

L·O·F polished plate glass for mirrors

DESCRIPTION

L·O·F Polished Plate Glass, because of its clearness and flatness, and minimum of imperfections is ideal for the manufacture of all types of quality mirrors.

Libbey·Owens·Ford Glass Company does *not* manufacture and sell chemically deposited mirrors for architectural purposes, but supplies polished plate glass to many of the leading mirror manufacturers.

USES

Mirrors are playing an increasingly important part in modern decoration and design. Architects, designers and builders have found that mirrors bring increased light, beauty, sparkle and spaciousness into residences, hotels, apartment houses and public buildings.

A recent use of mirrors is to double the apparent size of a room or space by facing one wall or two adjoining walls with large mirror sections, attached with rosettes or mastic. For successful illusion the room must be designed as a half or a quarter of a room so that important features occur at the intersection of mirror-to-wall, mirror-to-ceiling or mirror-to-mirror.

Circular mirrors for dining rooms, fireplace-to-ceiling mirrors for living rooms, full length plate glass mirrors for bedrooms and dressing rooms, built-in mirrors for smart powder rooms—all aid in introducing charm and dignity into modern homes.

Commercial uses for mirrors are wide and varied—up-to-minute department stores and showrooms use large areas of mirrored surfaces for background effects, triple mirrors in clothing sections, overhead mirrors for decorative purposes. Mirrored walls and ceilings are used extensively in bars, restaurants, clubs, theaters, etc., and add decorative beauty and spaciousness where room is limited.

SIZE LIMITATIONS

When facing wall areas with large mirror sections, it is generally advisable to keep the size of the sections within 7 x 12 feet, although larger dimensions can be furnished for special conditions. Larger wall areas may also be covered with a series of adjacent mirrors.

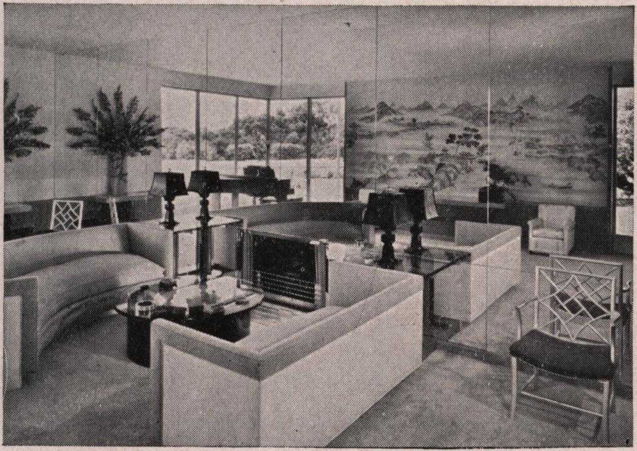
QUALITIES

Mirrors are graded according to the quality of plate glass used. "A"—(Silvering Quality) used only for the finest mirrors. No. 1 (Mirror Glazing Quality) used for all types of selected mirrors. No. 2 (Glazing Quality) used for all other plate glass mirrors which are termed "commercial" mirrors.

These standards correspond to those established by the Department of Commerce through the National Bureau of Standards as Commercial Standard CS27-36.

Specify L·O·F Polished Plate Glass mirrors to insure the finest glass quality.

Floor-to-ceiling polished plate glass mirror doubles the apparent size of this smart Toledo jewelry shop. Architect: Bellman, Gillet & Richards.



Generous use of mirror on the wall of this living room makes it seem much larger. Designer: Rudi Blesh, Burlingame, Calif.

DESCRIPTION

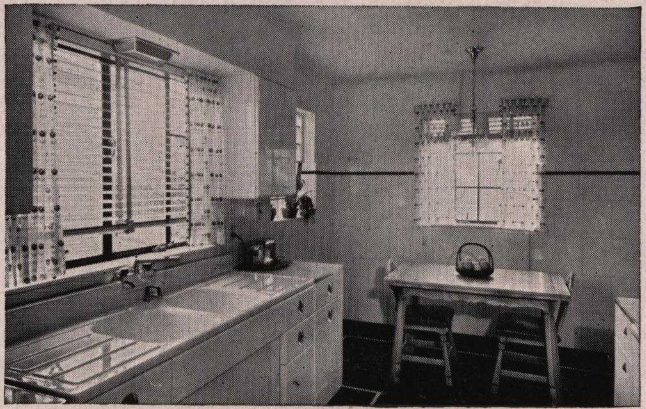
Vitrolite is opaque colored structural glass, $1\frac{1}{32}''$ or more in thickness, which can be applied to walls and other vertical or horizontal areas. It offers a practical means of attaining unusual beauty that is preserved by characteristics inherent in glass. Panels of *Vitrolite,* provide a more pleasant appearance than areas made up of many smaller pieces. Joints are so narrow as to hardly be noticeable.

CHARACTERISTICS

Vitrolite is opaque, homogeneous, non-absorbent and impervious to moisture. Possesses high tensile and crushing strength, and is highly resistant to absorption. *Vitrolite* will not warp, swell or craze. Liquids in common use cannot penetrate it, and it will not absorb liquids or gases that give off unpleasant odors. It is not easily stained and will not burn. It is difficult to write or mark upon and is easily cleaned by the whisk of a damp cloth—or in extreme cases by the application of soap and water. Think of walls or other surfaces in terms of these characteristics and you can see why *Vitrolite* has won the favor of builders and building home owners.

Because it's so easy to keep clean and is not harmed by water, the housewife of this home near Syracuse, New York, was "sold" on this colorful bathing alcove installation of *Vitrolite*.

*Reg. U.S. Pat. Off.



A view of the kitchen in the home of Mr. and Mrs. E. J. Lange, Cleveland, shows the use of colorful *Vitrolite* for the wainscot of the kitchen and breakfast nook.

USES

The applications of *Vitrolite* are as general as the desire for long-lasting beauty. Facing of storefronts and exteriors of buildings. Lobbies of hotels and office buildings. Wainscoting for partitions, corridors, washrooms, toilets and shower baths in public buildings. In homes—for wainscoting of bathrooms, kitchens, breakfast rooms as well as work table tops and splash backs.

LASTING BEAUTY

The color of *Vitrolite* is not a coating—it is all through the glass, providing a deep lustrous tone that is unharmed by weathering, steam, water or other elements that cause deterioration of less stable surfaces. *Vitrolite* bathroom walls are the pride of home owners after many years of subjection to splashing and washing. The *Vitrolite* colors were selected after much study to attain shades that blend well with each other. These colors harmonize beautifully with standard colors used by kitchen and bathroom fixture manufacturers. And the colors are in shades that blend readily with drapes, curtains and other home decoration elements.

SANITATION

Sparkling *Vitrolite* is easy to keep clean. In the home, it wipes clean with a damp cloth. For building exteriors and large commercial installations, *Vitrolite* can be washed with a hose and squeegee without harm to its finish. This colored structural glass is not affected by commonly-used soaps or disinfectants.

INSTALLATION

Vitrolite can be applied over any relatively flat hard wall surface that is not subject to warping. (*Vitrolite* should not be installed on wood.)

It is installed in interiors with Vitro-cement and 1/64″ joints buttered or pointed with joint cement. Pointing is usually sufficient but for shower partitions and wainscoting, the joints should be buttered and pointed. For exterior installation, it is attached with asphaltic mastic and supported at the lower edge adjoining the sidewalk and at horizontal joints by concealed shelf angles or by metal angles having facing shapes that overlap the *Vitrolite* All joints on exteriors should be 1/16″, buttered and pointed with joint cement. All horizontal joints should be cushioned with adhesive cork tape.

This Visual Front automobile showroom located in Toledo stands out with its generous use of peach and black *Vitrolite*. This eye appeal attracts customers; often results in additional sales. Architect, Edward L. Cousino.

Direct contact with metal, concrete or other hard substances should be avoided and some kind of cushioning material should always be provided. Abutting edges ground and chamfered, exposed edges polished and chamfered or finished with quarter round. Avoid sharp mitered corners. Corners subjected to rough usage should have metal guards. The *Vitrolite* at the extremities of a storefront installation should be protected with suitable metal member. Top courses should have projecting member of metal or other material provided with a drip. Distance from background wall or surface to face of *Vitrolite,* 5/8″ to 3/4″ for 11/32″ *Vitrolite;* 3/4″ to 7/8″ for 7/16″ *Vitrolite.* Details and specifications for *Vitrolite* construction available upon request, also booklets dealing with storefronts, theaters, restaurants, table tops, counters and soda fountains, bathrooms, kitchens, etc.

These high walls of *Vitrolite* make it easy to keep this public washroom, located in Toronto, Ontario, Canada, looking clean and neat. Because *Vitrolite* is a glass product, its sparkle is enduring.

SURFACE FINISHES

Fire polished surface, the natural result of the process of melting, rolling and annealing *Vitrolite,* is of maximum hardness and brilliance with a minimum degree of distortion. Mechanically ground and polished surface has an undistorted and mirror-like plane.

SIZE LIMITATIONS RECOMMENDED

For the maximum of beauty, strength and efficiency, *Vitrolite* panels should be restricted to the following range of sizes according to the type of installation: bathroom and kitchen walls, 8″ x 12″ to 24″ x 24″; interior walls for commercial buildings up to 30″ x 36″; storefront facing, 6 square feet; toilet partitions, up to 60″ x 60″.

COLORS AND THICKNESSES

Vitrolite Colors	Fire Polished	Ground and Polished
White	**11/32″, 7/16″ and 3/4″**	
Peach	**11/32″**	
Jade	**11/32″**	
Light Gray	**11/32″**	
Red		**11/32″**
Black		**11/32″, 7/16″ and 3/4″**

Thickness Tolerance: ± 1/32″.
Weights: Net Weight, lbs. per sq. ft.: 11/32″, 4.4 lbs.; 7/16″, 5.6 lbs.; 3/4″, 10.2 lbs.
***Vitrolite* colors are available subject to stock on hand or additional manufacture.**

L·O·F window glass

DESCRIPTION

L·O·F Flat Drawn Sheet Glass—representing the result of more than 25 years of quality glass manufacturing—is exceptionally transparent and has a natural fire-finished surface. It is relatively free from distortion. L·O·F uses its own well-known Flat Drawn Process in manufacturing sheet glass. The result is a better annealed pane that is subject to less breakage.

CLASSIFICATION

Libbey·Owens·Ford Sheet Glass is classified on the basis of thickness as Window, Heavy Sheet and Picture Glass.

WINDOW GLASS is supplied in two thicknesses:

1. Single Strength, varying from 10 to 11½ lights per inch, and identified by a *red* label.
2. Double Strength, varying from 7½ to 8 lights per inch, and identified by a *blue* label.

WINDOW GLASS is supplied in four standard qualities:

"AA"—Specially selected glass for high grade work.
"A"—Select glass of superior glazing quality.
"B"—Suitable for general glazing purposes.
Greenhouse—A glass of specially selected quality available in double strength only in sizes 16″ x 18″, 16″ x 24″ and 18″ x 20″.

HEAVY SHEET GLASS is supplied in thicknesses of 3/16″ and 7/32″ and in qualities "AA," "A" and "B."

PICTURE GLASS is furnished in three standard thicknesses listed in the specifications chart at right, and in "AA," "A" and "B" qualities.

USES

Libbey·Owens·Ford Sheet Glass for glazing windows, doors and storm sash in homes, apartments and other types of buildings; cabinet fronts and shelving.

Libbey·Owens·Ford Heavy Sheet Glass for glazing windows and doors where greater strength is required but where slight distortion is not objectionable; shelving and window ventilators.

SUGGESTED SPECIFICATIONS

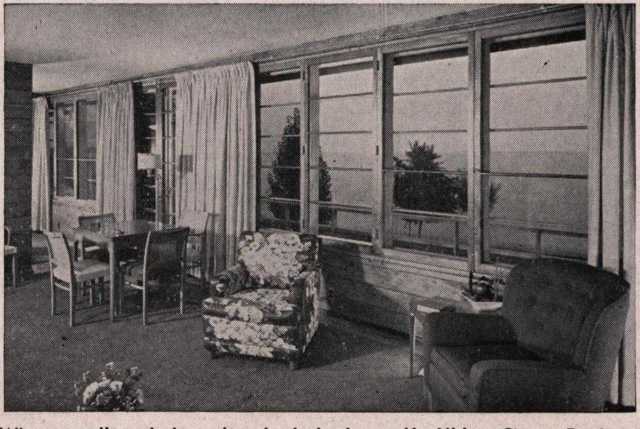
All sheet glass shall be Libbey·Owens·Ford Flat Drawn ("A") Quality (Double Strength). Each light shall bear the identifying L·O·F label.

PACKING

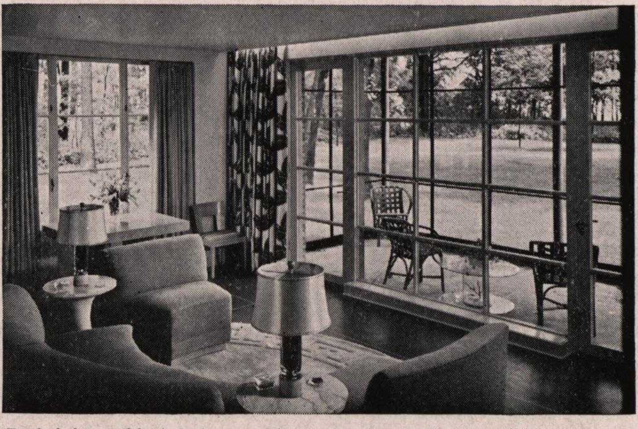
Shipped in Cushion Corner Cap packages, Libbey·Owens·Ford Sheet Glass is given neat, clean and practically moisture-proof protection.

CHART FOR SPECIFYING

Classification	Quality	Thickness in Inches	Approximate Wt. Sq. Ft. in Ozs.	Maximum Size Furnished
Window Glass				
Single Strength	"AA," "A," "B"	.087-.100	19.50	90 united in.
Double Strength	"AA," "A," "B"	.118-.133	26	120 united in.
Double Strength	Greenhouse	.118-.133	26	16″ x 18″ 16″ x 24″ 18″ x 20″
3/16″ Heavy Sheet	"AA," "A," "B"	.187-.205	40	50 sq. ft.
7/32″ Heavy Sheet	"AA," "A," "B"	.210-.230	45	60 sq. ft.
Picture Glass 19-23 lts. per in.	"AA," "A," "B"	.043-.053	9 to 11	60 united in.
Picture Glass 15-17 lts. per in.	"AA," "A," "B"	.058-.068	12 to 14	60 united in.
Picture Glass 12-14 lts. per in.	"AA," "A," "B"	.070-.080	15 to 17	60 united in.



Where quality window glass is desired, specify Libbey·Owens·Ford as did architect James F. Eppenstein of Chicago.



To brighten this interior, architects Pereira & Pereira, Chicago, specified L·O·F Double Strength "A" Quality Window Glass.

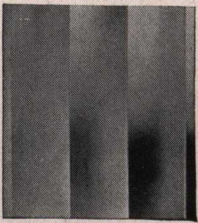
BLUE RIDGE...Tuf-flex*...heat absorbing glass

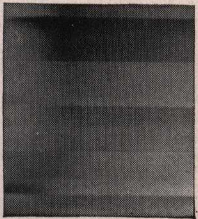
BLUE RIDGE FIGURED AND WIRE GLASS

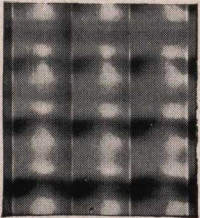
Libbey·Owens·Ford Glass Company is the United States Sales Agent for the Blue Ridge Glass Corporation which manufactures the Blue Ridge Figured and Wire Glass. A few of the popular patterns are here illustrated.

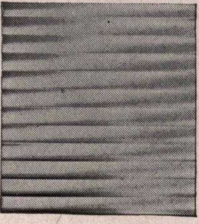
DESCRIPTION

Blue Ridge glass embraces a complete range of scientifically designed Figured and Wire Glass. In addition to plain rolled fire finish, three other types of surface processing are offered. They are *Satinol, Frosting* and *Sandblasting.* Most Blue Ridge patterns can be "Securitized" (heat-tempered) to resist certain types of impact and thermal shock.


FLUTEX


LOUVREX


DOUBLEX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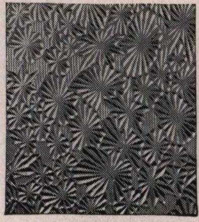
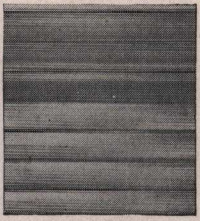
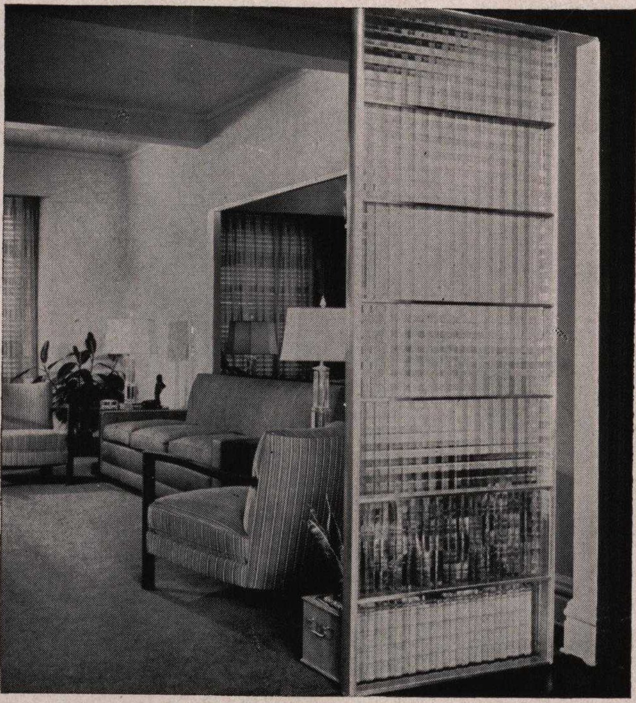

FLOREX


STYLEX

(Patterns shown are 1/3 actual size.)

USES

For glazing in windows, doors, skylights and partitions to transmit and diffuse light, retard the entry of solar heat (Aklo) and to obstruct vision through the glass. Also widely employed in lighting fixtures, signs and cabinets.



The translucent partition is made of double glazed Blue Ridge Louvrex Glass. It contributes to the charm of this bright and cheerful room. Architect, Joseph Aaronson Inc., New York City.

L·O·F *TUF-FLEX* TEMPERED PLATE GLASS

DESCRIPTION

L·O·F *Tuf-flex* is tempered plate glass made by a process of reheating and sudden cooling, as a result of which the outer surfaces are in a state of high compression while the central portion remains in tension, producing a condition highly resistant to breakage. *Tuf-flex* is approximately three to five times stronger than regular plate glass in sustaining loads and resisting fracture due to strain. The *Tuf-flex* process can be applied to both clear and colored plate glass.

L·O·F HEAT ABSORBING PLATE GLASS

DESCRIPTION

L·O·F Heat Absorbing Polished Plate Glass is a product of special chemical composition, pale bluish green in color, and made to absorb a high percentage of the infrared heat rays of the sun. Part of the absorbed heat is subsequently transferred to the interior, but a considerable portion is given off to the exterior, affecting a net reduction of the solar heat entering through the glass.

USES

L·O·F Heat Absorbing Plate Glass is particularly suited for glazing the windows of office and apartment buildings, hospitals, schools, factories and other types of buildings where the exclusion of solar heat is a problem.

CHART FOR SPECIFYING

Thickness	Thickness Tolerance	Standard Maximum Width and Length	Maximum Size Special Order	Approx. Weight Lbs. Per Sq. Ft.
1/8"	±1/32"	40" x 80"	55" x 90"	1.64
1/4"	±1/32"	70" x 100"	100" x 130"	3.27

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*Reg. U.S. Pat. Off.

SERVICES

Builders will find it helpful to consult their nearest Libbey·Owens·Ford branch office, shown below. These offices are able to assist builders when problems arise concerning the use of L·O·F glass.

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Chicago 3, Ill.	**Central 2490**
Cincinnati 2, O.	**Main 6174**
Cleveland 13, O.	**MA 7180**
Dallas 1, Tex.	**Riverside 4026**
Denver 2, Colo.	**Tabor 8015**
Detroit 2, Mich.	**Mad. 0080**
Indianapolis 4, Ind.	**Franklin 1363**
Kansas City 6, Mo.	**Victor 5360**
Los Angeles 13, Calif.	**Mich. 0854**
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Philadelphia 2, Pa.	**Penny. 8666**
Richmond 19, Va.	**3-3034**
St. Louis 1, Mo.	**Central 9863**
San Francisco 5, Calif.	**Sutter 4360**
Seattle 1, Wash.	**Seneca 2513**
Toledo 3, O.	**Main 5291**
Washington 5, D. C.	**Republic 4472**

See the yellow pages of your telephone directory for your nearest Libbey·Owens·Ford glass distributor.

LIBBEY·OWENS·FORD GLASS COMPANY

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